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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,553	09/05/2006	Masatoshi Takahashi	XA-10261	2958

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MCLEAN, VA 22102-3833

EXAMINER

KING, DOUGLAS

ART UNIT	PAPER NUMBER
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2824

NOTIFICATION DATE	DELIVERY MODE
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12/01/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocketing@milesstockbridge.com
sstiles@milesstockbridge.com

Office Action Summary	Application No.	Applicant(s)	
	10/521,553	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	DOUGLAS KING	2824	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 14, 17-20 and 23-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 14, 17-20 and 23-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Amendment

Acknowledgment is made of applicant's Amendment, filed 03 September 2010.

The changes and remarks therein have been considered.

Claims 1-11, 14, 17-20 and 23-31 are pending in the application.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-11, 14, 17-20 and 23-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Newly amended independent claims 1, 10, 11, 14, 18, 28 and 29 recite "wherein the first non-volatile memory includes...a first control signal line...a second control signal line..." and also recite "wherein the second non-volatile memory includes the first control signal line and the second control signal line." Applicant's disclosure as originally filed fails to support a first and second control lines connected in such a manner wherein the same lines are present in both the first and second memories.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 1-5, 10, 14, 17, 18-20, 23 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi (Japanese Patent Publication 10-198776) in view of Choi (U.S. Patent 5,763,308) and Lee (U.S. Patent 6,862,223).

Regarding claims 1, 4, 10, 18, and 28, Ishibashi discloses an IC card being enclosed with a synthetic resin (see Figure 1, 100) comprising: a first non-volatile memory (see Figure 4, 20) for erasing stored information on a first data length unit; a second non-volatile memory (15) for erasing stored information on a second data length unit; a central processing unit (12); and a terminal for inputting/outputting data from/to an outside (30 or 40), wherein encrypted data (the type or content of the data does not impart structure to a device claim see MPEP section 2114) are input/output from/to the

Art Unit: 2824

outside, the first non-volatile memory is used for storing an encryption key to be utilized for encrypting the data, the second non-volatile memory is used for storing a program to be processed by the central processing unit (again, the type or content of data is does not structurally distinguish an apparatus claim), each of the first non-volatile memory and the second non-volatile memory has a plurality of non-volatile memory cells (implied by array).

Ishibashi fails to disclose the particular structure of the cells and therefore fails to disclose that each of the non-volatile memory cells has a channel region between a first diffusion layer region and a second diffusion layer region which are formed on the substrate, has an electric charge storage layer on the channel region through a first insulating film, has a first gate terminal on the electric charge storage layer through a second insulating film, and has a second gate terminal through the first gate terminal and a third insulating film on a second channel region which is adjacent to a first channel region provided under the electric charge storage layer, a hot electron generated in the channel region provided under the third insulating film is injected into the electric charge storage layer or an electric charge is extracted from the electric charge storage layer, thereby carrying out an operation for changing a threshold voltage of the memory cell.

However, Choi discloses such an array wherein each of the non-volatile memory cells has a channel region (see Figure 3, area between 33 and 32 and below 34) between a first diffusion layer region (32 or 33) and a second diffusion layer (other of 32 and 33) region which are formed on the substrate (31), has an electric charge storage

Art Unit: 2824

layer (34) on the channel region through a first insulating film (see column 3, lines 33+), has a first gate terminal (35) on the electric charge storage layer through a second insulating film, and has a second gate terminal (37) through the first gate terminal and a third insulating film on a second channel region which is adjacent to a first channel region provided under the electric charge storage layer, a hot electron (see claim 1) generated in the channel region provided under the third insulating film is injected into the electric charge storage layer or an electric charge is extracted from the electric charge storage layer, thereby carrying out an operation for changing a threshold voltage of the memory cell (the cells of Choi are capable of being operated in this manner and therefore the limitation is met--see MPEP section 2114).

Ishibashi also fails to disclose the newly cited first and second control signal lines, the control signal sub-lines and the plurality of switches. However, Lee discloses such drive and control circuitry for memory units with two gates (see Figure 25) a first control signal line (GWL), first control signal sub-lines (WL1, WL2, etc), second control signal lines (SG11, etc.) and switches connected to the first control signal line (transistors connected to SB) and selecting among the first control sub-lines.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include memory cells of Choi as the first and second non-volatile memories of Ishibashi for any of the benefits taught by Choi (see column 5, lines 21+) and to include the drive and control circuitry of Lee in the first and second memories in order to access and control the memory cells.

Regarding claim 2, Ishibashi as modified above discloses the semiconductor processing device according to claim 1, wherein the first non-volatile memory is further used for storing information to be utilized for specifying an individual (again, the type of information stored does not impart structure to the claimed device).

Regarding claim 3, Ishibashi as modified above discloses the semiconductor processing device according to claim 2, wherein the first data length is smaller than the second data length(see machine translation of Ishibashi, paragraph 0010).

Regarding claim 5 and 23, Ishibashi as modified above discloses the semiconductor processing device according to claim 4, wherein the central processing unit can give access to the first non-volatile memory and the second non-volatile memory in parallel (the CPU can give access to the first memory while the second memory is still accessible--see Figure 3).

Regarding claim 12, Ishibashi as modified above discloses the IC card according to claim 10 , wherein the central processing unit and the first non-volatile memory are formed on a first semiconductor substrate (see Ishibashi Abstract and Figure 3), the second non-volatile memory is formed on a second semiconductor substrate, and the first non-volatile memory uses a nitride film (see Choi column 3, lines 33+) for a memory cell in order to store data.

Regarding claim 13, Ishibashi as modified above discloses the IC card according to claim 10 or 11, wherein the central processing unit and the first non-volatile memory are formed on a first semiconductor substrate (see Ishibashi Abstract and Figure 3), the second non-volatile memory is formed on a second semiconductor

Art Unit: 2824

substrate. Ishibashi as modified above fails to disclose that the second non-volatile memory uses a floating gate for a memory cell in order to store data. However, EEPROM memories employing a floating gate are common and well known in the art and one of ordinary skill would have been aware of the benefits of substituting a floating gate for the nitride layer of Choi.

Regarding claims 14 and 17, Ishibashi as modified above discloses the italicized limitations below as outlined in the rejection of claim 10 above: A *semiconductor processing device being capable of inputting/outputting encrypted data to/from an outside comprising: a first non-volatile memory for erasing stored information on a first data length unit; a second non-volatile memory for erasing stored information on a second data length unit; and a central processing unit, wherein each of the first non-volatile memory and the second non-volatile memory has a plurality of memory cells, each of the memory cells has a source region, a drain region and a channel region between the source region and the drain region, has a data storage insulating layer and a first gate on the channel region through an insulating layer, and has a second gate on the data storage insulating layer, each of the first non-volatile memory and the second non-volatile memory has a plurality of first word lines (see Choi, Figure 5, 1, 2), corresponding memory cells are connected to the first word lines when the stored information is erased from the first non-volatile memory, corresponding memory cells are connected to the first word lines when the stored information is erased from the second non-volatile memory, and the number of the memory cells to be connected to the first word lines in the first non-volatile memory is smaller than that of the memory*

Art Unit: 2824

cells to be connected to the first word lines in the second non-volatile memory (see Ishibashi machine translation, paragraph 0010; second memory is a flash, or block type erase and first memory is a byte type erase--i.e. second memory has more cells connected for simultaneous erasure).

Regarding claims 19 and 20, Inasmuch as the claims are understood, Ishibashi as modified above discloses the semiconductor processing device according to claim 18, wherein the non-volatile memory cell has a source region, a drain region, and a channel region interposed between the source region and the drain region on a semiconductor substrate, a control gate electrode provided through a first insulating film and a memory gate electrode provided through a second insulating film and an electric charge storage insulating film and isolated electrically from the control gate electrode are provided on the channel region(see Choi and rejection of claim 18 above). Ishibashi as modified above is silent on the respective gate breakdown voltage (or, gate insulator breakdown as the gate does not breakdown) and therefore fails to disclose that a gate breakdown voltage of the control gate electrode is lower than that of the memory gate electrode; and the gate breakdown voltage of the control gate electrode is equal to that of an MOS transistor included in the CPU. However, the gate breakdown voltage is a result effective variable and effects the operational characteristics of the device and it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the respective voltages.

2. Claims 11 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi (Japanese Patent Publication 10-198776) in view of Choi (U.S. Patent 5,763,308) and Lee (U.S. Patent 6,862,223) as applied to claim 10 above and further in view of Norton (U.S. Patent 6,572,015).

Claims 11 and 29 recite substantially the same limitations as claims 1, 10, 28 rejected above with the addition of an antenna. Ishibashi as modified above fails to disclose an antenna. However, Norton discloses an antenna in conjunction with an IC card for the purpose of wireless communication with an exterior (see Figures 1 and 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the IC card of Ishibashi to include an antenna for wireless communication since such a configuration was known in the art at the time of invention and the modification would yield a predictable result.

Claims 30 and 31 alternatively dependent upon claims 11 and 29 would be rejected in the same manner as those depending from claims 10 and 28 above.

3. Claims 6-9 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi (Japanese Patent Publication 10-198776) in view of Choi (U.S. Patent 5,763,308) and Lee (U.S. Patent 6,862,223) as applied to claims 1 and 19 above and further in view of Yamada (Japanese Patent Publication 59-021058).

Regarding claims 6-9 and 24-27, Ishibashi as modified above fails to disclose details of the control portions of the first and second memories and therefore fails to

Art Unit: 2824

disclose that any portion of the control portion is shared (e.g. sensing amplifiers, voltage generators, and/or decoding circuitry). However, Yamada discloses two memories sharing such circuitry (see Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to share control circuitry (decoders, voltage generators, and sensing amplifiers) among the first and second memories in order to conserve space.

Response to Arguments

4. Applicant's arguments filed 03 September 2019 have been fully considered, but rely on the newly cited limitations which have been fully addressed in the rejections above.⁹

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2824

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS KING whose telephone number is (571)272-2311. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Douglas King/
Examiner, Art Unit 2824

/VanThu Nguyen/
Primary Examiner, Art Unit 2824